

1113
12
TM
1945

TM 11-2361

WAR DEPARTMENT TECHNICAL MANUAL

U.S. Dept. of Army

CAMERA PH-324

RESTRICTED. DISSEMINATION OF RESTRICTED MATTER.
The information contained in restricted documents and the essential characteristics of restricted materiel may be given to any person known to be in the service of the United States and to persons of undoubted loyalty and discretion who are cooperating in Government work, but will not be communicated to the public or to the press except by authorized military public relations agencies. (See also par. 28, AR 380-5, 15 Mar 1944.)

WAR DEPARTMENT

20 FEBRUARY 1945

CAMERA PH-324



WAR DEPARTMENT

20 FEBRUARY 1945

RESTRICTED. DISSEMINATION OF RESTRICTED MATTER.

The information contained in restricted documents and the essential characteristics of restricted materiel may be given to any person known to be in the service of the United States and to persons of undoubted loyalty and discretion who are cooperating in Government work, but will not be communicated to the public or to the press except by authorized military public relations agencies. (See also par. 28, AR 380-5, 15 Mar 1944.)

WAR DEPARTMENT,
WASHINGTON 25, D.C.. 20 FEBRUARY 1945.

TM 11-2361, Camera PH-324, is published for the information and guidance of all concerned.

[A.G. 300.7 (10 May 44).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
*Major General,
The Adjutant General.*

DISTRIBUTION:

AAF (5); AGF (5); ASF (5); T of Opn (5); Base Comd (5); Dept (5); Def Comd (2); AAF Comd (2); Arm & Sv Bd (2); Tech Sv (2); SvC (5); Area ASvC (2); WDGS Lib (5); PC&S (2); PE (2); Dep, 11 (2); Gen Overseas SOS Dep (Sig Sec) (2); GH (2); M Conc C (2); Air Base Hosp (2); Gen Sv Sch (5); Sp Sv Sch (10); USMA (2); ROTC (5); Lab, 11 (2); Sig AS (2); Rep Shop, 11 (2); A (5); D (2); AF (2); 5 copies to each of the following: T/O & E 5-97, 5-97S, 5-398T, 5-399T, 5-456, 5-457, 5-467, 5-512S, 9-500, Ord Serv Composite Orgn; 11-37, 11-107, 11-127, 11-237, 11-267, 11-587, 11-597, 19-56, 19-57, 19-217, 30-47.

(For explanation of symbols see FM 21-6.)

U113
12

TM 11:2361
1945

TABLE OF CONTENTS ★ ★

SECTION	I. Description.	Paragraph	Page
	Camera PH-324.....	1	1
	Case PH-371.....	2	1
	Type of film.....	3	3
	II. Installation and operation.		
	General.....	4	4
	Preliminary check.....	5	4
	Loading and winding film.....	6	7
	Exposure.....	7	9
	Focusing.....	8	9
	Direct view finder.....	9	9
	Making exposure.....	10	10
	Delayed action release.....	11	10
	Removing film.....	12	11
	III. Maintenance.		
	General.....	13	12
	Inspection procedure.....	14	12
	Troubles and remedies.....	15	12
	Tools required.....	16	15
	Disassembly.....	17	15
	Tests and repairs.....	18	19
	Reassembly.....	19	20
	Unsatisfactory Equipment Report...	20	23
	IV. Supplementary data.		
	Maintenance parts list for Camera PH-324.....	21	24

M558385

LIST OF ILLUSTRATIONS

<i>Fig. No.</i>	<i>Title</i>	<i>Page</i>
1	Camera PH-324, operating positions	VI
2	Camera PH-324 and Case PH-371	2
3	Lens and shutter	3
4	Camera PH-324, rear view	3
5	Camera PH-324, top view	4
6	Lock button for back assembly	6
7	Removing back assembly	6
8	Threading film	7
9	Film threaded	8
10	Raising view finder	10
11	Shutter, top view	11
12	Top cover assembly and associated parts	14
13	Parts inside case	16
14	Parts on front of case	18
15	Parts on back assembly	19

DESTRUCTION NOTICE

WHY —To prevent the enemy from using or salvaging this equipment for his benefit.

WHEN —When ordered by your commander.

HOW —1. Smash—Use sledges, axes, handaxes, pickaxes, hammers, crowbars, heavy tools.
2. Cut—Use axes, handaxes, machetes.
3. Burn—Use gasoline, kerosene, oil, flame throwers, incendiary grenades.
4. Explosives—Use firearms, grenades, TNT.
5. Disposal—Bury in slit trenches, fox holes, other holes. Throw in streams. Scatter.

USE ANYTHING IMMEDIATELY AVAILABLE FOR DESTRUCTION OF THIS EQUIPMENT.

WHAT —1. Smash—Lens, shutter, film cassettes.
2. Cut—Film, carrying case, carrying strap.
3. Burn—Film, technical manual, film captions, labels.
4. Bend—Film cassettes.
5. Bury or scatter—Remains.

DESTROY EVERYTHING



TL 92162

1. For horizontal picture

2. For vertical picture

Figure 1. Camera PH-324, operating positions.

RESTRICTED

SECTION I

DESCRIPTION

1. CAMERA PH-324.

a. Camera PH-324 (fig. 1) is a 35-mm still camera, equipped with an $f/4.5$ anastigmat lens of 51-mm focal length. The camera has a between-the-lens shutter. It includes carrying Case PH-371 (figs. 1 and 2) and is part of Photographic Set PH-261. This camera is fitted with click stop adjustments.

b. The lens (fig. 3) is marked for the following lens openings: $f/4.5$, $f/5.6$, $f/8$, $f/11$, and $f/16$. At each of these openings the lens opening lever fits into a click stop in the shutter speed and lens opening index plate. This mechanism assures correct positioning of the lens opening lever, prevents it from being moved accidentally to another lens opening, and permits setting the lens opening without reference to the index plate. The focusing collar is engraved for focusing on the following distances: 4, 5, 6, 8, 10, 15, 25, and 50 (feet), and INF. (infinity). A click stop at the 25-foot setting enables the camera to be focused rapidly and positively for this distance.

c. The shutter (fig. 3) has four speeds: $1/25$, $1/50$, $1/100$, and $1/150$ (second). Bulb or time exposures can also be made by setting the shutter speed selector to B or T, respectively. The shutter is cocked automatically when the film is wound.

d. The finder (fig. 4) is of the direct viewing type, located above and to the rear of the lens. When not in use, it is folded down as shown in figure 5.

e. An exposure counter dial (fig. 5) and a film release button (fig. 5) are located next to the winding knob, marked WIND (fig. 5).

2. CASE PH-371.

a. Carrying Case PH-371 for Camera PH-324 is large enough to carry the camera with a filter fitted over the lens in a $1\frac{1}{4}$ -inch diameter adapter ring. A yellow filter and an adapter ring are parts of Photographic Set PH-261. Refer to TM 11-400.

b. The carrying case is composed of two parts: the body section shown on the camera in figure 2(1), and the cover section shown removed from



①



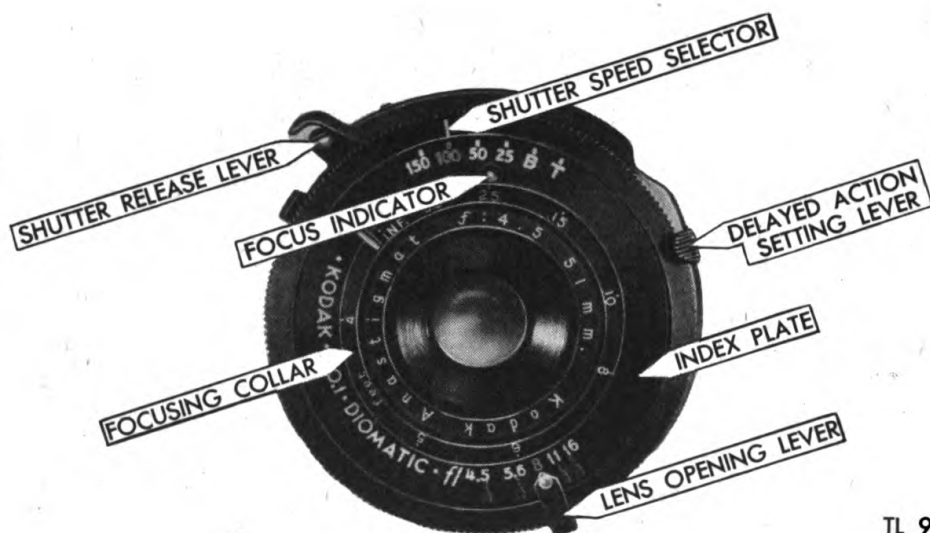
②

TL 92163

1. Camera PH-324 with body section of Case PH-371

2. Cover section of Case PH-371

Figure 2. Camera PH-324 and Case PH-371.



TL 92164

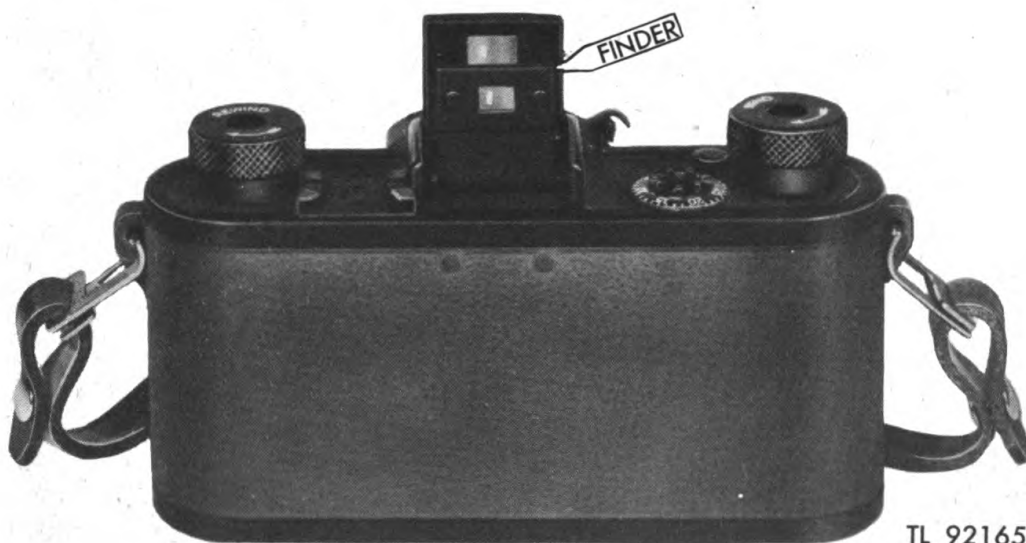
Figure 3. Lens and shutter.

the camera in figure 2(2). The cover section is attached to the body section with snap fasteners.

c. The carrying case is attached to Camera PH-324 by means of a large knurled-head screw underneath the carrying case. This screw enters the tripod socket on the bottom of the camera below the winding knob (fig. 5).

3. TYPE OF FILM.

This camera uses 35-mm film, black-and-white or color, in daylight-loading cassettes.



TL 92165

Figure 4. Camera PH-324, rear view.

SECTION II

INSTALLATION AND OPERATION

4. GENERAL.

Before taking the camera to the scene to be photographed, select the film with due regard to the subject and to the light condition to be encountered, when these factors are known. Before making the selection, consult the table of daylight exposure data on the opposite page. The exposure data listed apply to film in prime condition. For film stored under hot or humid conditions, increase the exposure by opening the lens one stop or by using the next slower shutter speed. For scenes taken in early morning or late afternoon or winter scenes (except snow scenes), or when a yellow filter is used, increase the lens opening by one division or use the next slower shutter speed.

5. PRELIMINARY CHECK.

a. Remove the camera from the carrying case by unscrewing the knurled-head screw underneath the carrying case and unfastening the snap at the back bottom center of the case.



TL 92166

Figure 5. Camera PH-324, top view.

DAYLIGHT EXPOSURE DATA FOR BLACK-AND-WHITE FILM

<i>Classification of subject</i>	<i>Film (group)</i>	<i>Bright sun</i>	<i>Hazy sun</i>	<i>Cloudy bright</i>	<i>Cloudy dull</i>
Average	1	<i>f/5.6 1/100</i>	<i>f/4.5 1/100</i>	<i>f/4.5 1/50</i>	<i>f/4.5 1/25</i>
	2	<i>f/8 1/100</i>	<i>f/5.6 1/100</i>	<i>f/4.5 1/100</i>	<i>f/4.5 1/50</i>
	3	<i>f/11 1/100</i>	<i>f/8 1/100</i>	<i>f/5.6 1/100</i>	<i>f/4.5 1/100</i>
Brilliant	1	<i>f/11 1/100</i>	<i>f/8 1/100</i>	<i>f/5.6 1/100</i>	<i>f/4.5 1/100</i>
	2	<i>f/16 1/100</i>	<i>f/11 1/100</i>	<i>f/8 1/100</i>	<i>f/5.6 1/100</i>
	3	————	<i>f/16 1/100</i>	<i>f/11 1/100</i>	<i>f/8 1/100</i>
Bright	1	<i>f/8 1/100</i>	<i>f/5.6 1/100</i>	<i>f/4.5 1/100</i>	<i>f/4.5 1/50</i>
	2	<i>f/11 1/100</i>	<i>f/8 1/100</i>	<i>f/5.6 1/100</i>	<i>f/4.5 1/100</i>
	3	<i>f/16 1/100</i>	<i>f/11 1/100</i>	<i>f/8 1/100</i>	<i>f/5.6 1/100</i>
Shaded	1	<i>f/4.5 1/100</i>	<i>f/4.5 1/50</i>	<i>f/4.5 1/25</i>	————
	2	<i>f/5.6 1/100</i>	<i>f/4.5 1/100</i>	<i>f/4.5 1/50</i>	<i>f/4.5 1/25</i>
	3	<i>f/8 1/100</i>	<i>f/5.6 1/100</i>	<i>f/4.5 1/100</i>	<i>f/4.5 1/50</i>

Average subjects: Near-by people, houses, and streets, *not in shade*. Use this classification if in doubt.

Brilliant subjects: Beach, marine, and snow scenes.

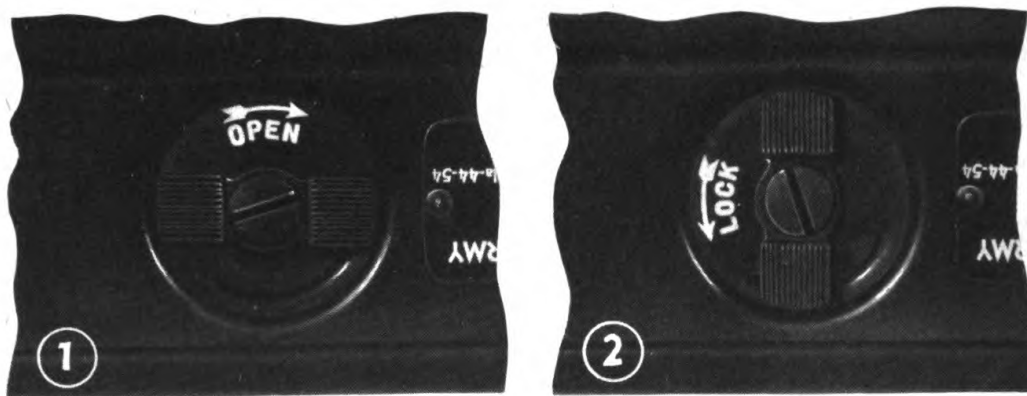
Bright subjects: Near-by people or objects in marine, beach, or snow scenes.

Shaded subjects: People, landscapes, and streets *in open shade*, lighted by open sky (not under trees, porch roof, etc.).

<i>Group 1</i>	<i>Group 2</i>	<i>Group 3</i>
Kodak Panatomic-X	Kodak Plus-X	Kodak Super-XX
Du Pont Superior-1	Du Pont Superior-2	Du Pont Superior-3
	Anso Superpan Supreme	Anso Ultra Speed Pan

DAYLIGHT EXPOSURE DATA FOR KODACHROME FILM

<i>Classification of subject</i>	<i>Clear sun; subject in direct sunlight</i>	<i>Hazy sun; soft shadows cast</i>	<i>Cloudy bright</i>	<i>In open shade with bright reflecting clouds</i>
Average	<i>f/4.5 1/100</i>	<i>f/4.5 1/50</i>	<i>f/4.5 1/25</i>	<i>f/4.5 1/25</i>
Light	<i>f/5.6 1/100</i>	<i>f/5.6 1/50</i>	<i>f/4.5 1/50</i>	<i>f/4.5 1/50</i>
Dark	<i>f/5.6 1/50</i>	<i>f/5.6 1/25</i>	—	—
Use the exposures listed from two hours after sunrise until two hours before sunset. The table should be followed for both close-ups and distant views. Special attention should, however, be given to the tone of the subject (average, light, or dark).				



TL 92167

1. Position when locked

2. Position when unlocked

Figure 6. Lock button for back assembly.



TL 92168

Figure 7. Removing back assembly.

b. Inspect the lens for dust, fingerprints, or smudges. Remove the dust with a camel's-hair brush, and if necessary, clean the lens with lens tissue or a lintless cloth.

c. Turn the winding knob (fig. 5) to see that it turns freely and does not bind. Note that the winding knob can be disengaged by lifting it upward. The winding knob should be pushed down, touching the top cover of the camera, except when exposed film is being rewound into its magazine.

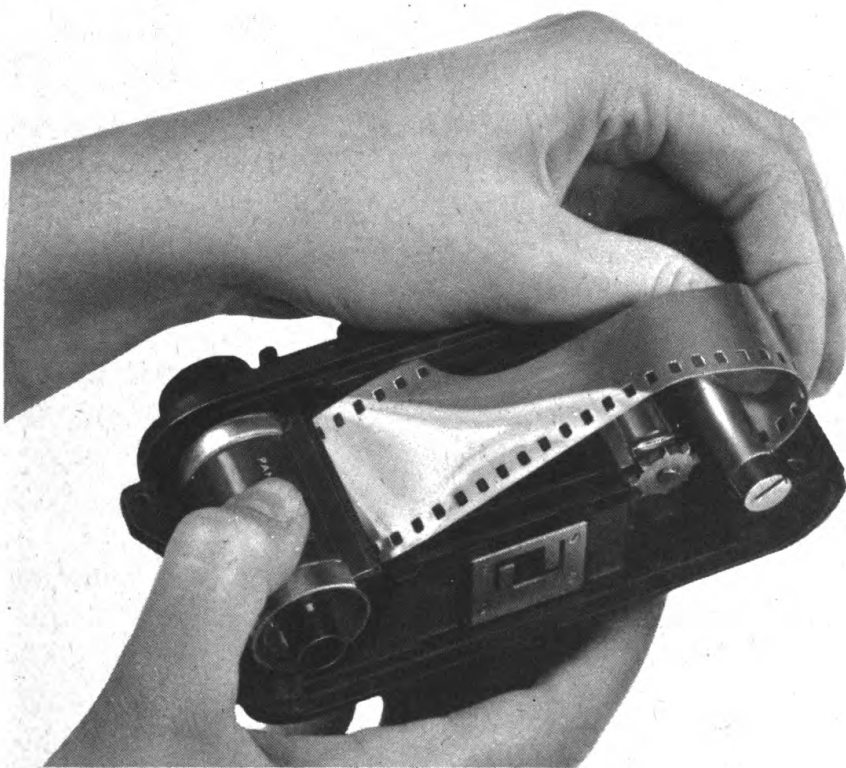
6. LOADING AND WINDING FILM.

Always load the camera in *subdued light*, never in direct sunlight.

a. Turn the lock button on the bottom of the camera to OPEN (fig. 6); then slide off the back assembly (fig. 7).

b. Insert the 35-mm film magazine in the empty recess opposite the film take-up spool. The crosspiece in the recessed end of the cassette must be inserted in the slot of the rewind key post, which is turned by the knob marked REWIND (fig. 5).

c. Carefully pull the film leader from the cassette until about 5 inches of film are exposed. Insert the end of the film in the slot of the film take-up spool as shown in figure 8. Do not try to remove this spool from the camera.



TL 92169

Figure 8. Threading film.



TL 92170

Figure 9. Film threaded.

d. Turn the winding knob in the direction of the arrow until the film has made one complete turn on the film take-up spool (fig. 9).

e. Be sure the teeth of the lower sprocket engage the perforations of the film leader, and that the film is riding properly in its path (fig. 9).

f. Replace the back assembly of the camera and turn the lock button on the bottom of the camera to LOCK (fig. 6).

g. Turn the winding knob in the direction of the arrow until it locks. Then, to release the winding knob, push in the film release button and let it spring back. Continue to wind the leader through the camera in this manner *until the winding knob locks for the fourth time*. Enough film will now be wound on the film take-up spool to bring the film into position for the first exposure. Do not push in the film release button until after the exposure has been made.

h. Turn the exposure counter dial to the first line after 0, the position shown in figure 5. The camera is now ready for the first exposure.

i. After making each exposure, press the film release button, let it spring back, and then turn the winding knob until it locks. This brings unexposed film into position, advances the exposure counter dial, and cocks the shutter. It is impossible to make a double exposure with this camera.

7. EXPOSURE.

The amount of light passing through the lens is controlled by the shutter speed and the lens opening.

a. Shutter Speed. For shutter speeds below 1/100 second, extreme care should be taken to hold the camera steady during the exposure.

(1) A choice of four shutter speeds is given: 1/25, 1/50, 1/100, and 1/150 second (fig. 3).

(2) For time or bulb exposures the camera must be on a solid support, such as a tripod or table.

b. Lens Openings.

(1) The amount of light which will be admitted while the shutter is open is controlled by the size of the lens opening. To change the size of the opening, move the lens opening lever (fig. 3) on the bottom of the shutter.

(2) For average subjects outdoors, when the sun is shining, move this lever to $f/8$ and make an exposure of 1/100 second with films of medium speed (see table of daylight exposure data).

(3) From $f/5.6$ to $f/16$, each succeeding smaller lens opening (larger number) admits half the light of the preceding opening. For example, $f/8$ admits twice the light of $f/11$ and half the light of $f/5.6$. The opening $f/4.5$ allows about $1\frac{1}{2}$ times as much light to enter the lens as the opening $f/5.6$.

8. FOCUSING.

a. The camera lens is focused by turning the focusing collar (fig. 3) to the right or left until the figure representing the distance from the subject to the lens is at the focus indicator (fig. 3). The camera can also be focused to intermediate distances by estimating the proper proportion of the distance between marked settings on the scale.

b. For ordinary scenes, set the focusing collar at 25 feet; if the principal object is nearer or farther, change the focus accordingly.

c. When the subject is nearer than 10 feet, measure the exact distance.

9. DIRECT VIEW FINDER.

a. The finder (figs. 4 and 5) shows what will appear in the picture, but on a much reduced scale. To bring the finder into position, lift the front frame (fig. 10).

b. When viewing, hold the camera at a distance from the eye which makes the edges of the rear opening appear superimposed on the edges of the front opening. This will insure proper aiming of the camera.

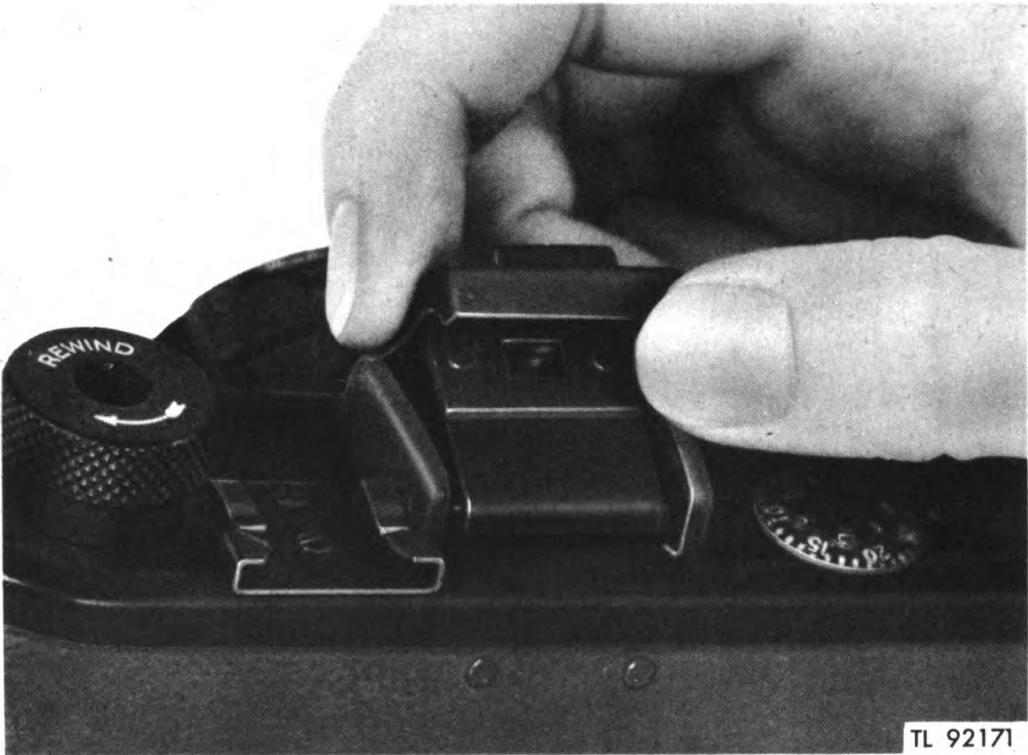


Figure 10. Raising view finder.

10. MAKING EXPOSURE.

a. The camera can be operated out of the case or in the case with the cover section either open or removed. The method of holding the camera is the same in all three cases except that care must be taken to prevent the lens from being blocked by the cover section when it is left on. For horizontal pictures hold the camera as shown in figure 1(1). For vertical pictures hold the camera as shown in figure 1(2).

b. Hold the camera steady and slowly press the shutter release lever (fig. 11) to make the exposure.

NOTE: Be careful to press the shutter release lever and not the trigger guard (fig. 11).

c. Before the exposure is made, a red signal (fig. 11) shows in the slot in the trigger guard which covers the top of the shutter. This indicates that an unexposed section of film is in position and that the shutter is cocked. If the signal is not visible, turn the winding knob until it locks, and the signal will appear.

11. DELAYED ACTION RELEASE.

The delayed action mechanism (fig. 3) retards the opening of the shutter for about 10 seconds after the shutter release lever is pressed.



TL 92172

Figure 11. Shutter, top view.

This mechanism can be used for two purposes: to allow the photographer to appear in the picture, or to allow vibration to dampen out of the tripod or other support after the shutter release is pressed. To use the delayed action setting lever, proceed as described below.

- a. Place the camera on a tripod or some other firm support.
- b. Set the lens opening and shutter speed, and focus the camera.
- c. Press the delayed action setting lever downward as far as it will go, and then press the shutter release lever.
- d. After about 10 seconds the shutter will open and make the exposure.

12. REMOVING FILM.

- a. After the last exposure has been made (as indicated on the exposure counter dial), lift the winding knob (fig. 5) so that the film take-up spool is free to turn backward. Then rewind the film by turning the knob marked REWIND (fig. 5) in the direction of the arrow. Rewinding a film immediately after the last exposure will prevent any possibility of tearing the film off the spool inside the cassette.
- b. When the exposure counter dial stops turning, stop winding immediately to avoid drawing the end of the film leader into the cassette. The end of the film leader must remain outside the cassette if the film is to be developed in Tank PH-322. Refer to TM 11-400.
- c. Remove the back assembly as described in paragraph 6a and lift out the cassette of exposed film.

SECTION III

MAINTENANCE

NOTE: Failure or unsatisfactory performance of equipment used by Army Ground Forces and Army Service Forces will be reported on W.D., A.G.O. Form No. 468 (Unsatisfactory Equipment Report). For particulars see paragraph 20. If Form No. 468 is not available, see TM 38-250. Failure or unsatisfactory performance of equipment used by Army Air Forces will be reported on Army Air Forces Form No. 54 (Unsatisfactory Report).

13. GENERAL.

Camera PH-324 is constructed carefully so that with proper care it will give satisfactory performance. It is strong enough to withstand normal use, but care should be taken to avoid dropping it, or striking it with sharp or hard instruments. No lubrication is required.

14. INSPECTION PROCEDURE.

The lens and finder must always be kept clean.

a. To clean the lens, remove the back assembly of the camera. Remove dust from the front and rear lens surfaces with a brush or an air syringe. Wipe the surfaces carefully with lens tissue or a soft lintless cloth. When it is available, apply a drop of lens cleaner fluid to the lens surface before cleaning. Never unscrew or remove lens elements. *Never remove the lens.*

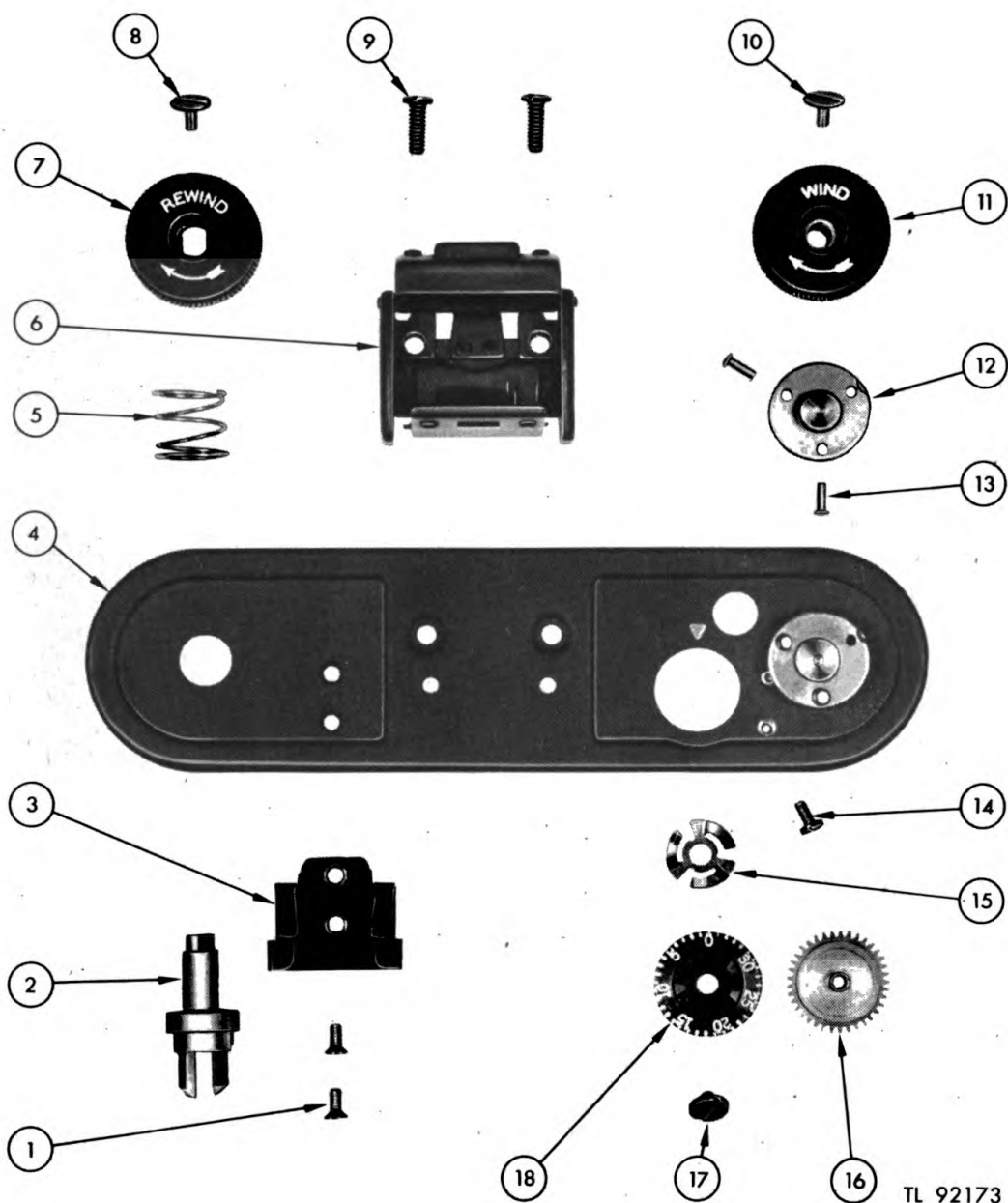
b. Dust the inside of the camera at regular intervals to prevent dust from settling on the film, causing scratches and dust spots. Use a soft, lintless cloth or a camel's-hair brush.

15. TROUBLES AND REMEDIES.

Following is a list of some of the more common troubles that may arise, their probable causes, and suggested remedies.

TROUBLE	PROBABLE CAUSE	REMEDY
Binding when the film is rewound into the cassette after exposure.	Excessive friction between the film take-up spool assembly (fig. 13(26)) and the film take-up spool clip (fig. 13 (30)).	Relieve the tension slightly on the film take-up spool clip (fig. 13(30)) by removing the film take-up spool clip screw (fig. 13 (29)), bending and re-tensioning the clip, and replacing the screw.

TROUBLE	PROBABLE CAUSE	REMEDY
Film is scratched.	Too much tension on the film take-up spool clip (fig. 13(30)).	Ease the tension on the film take-up spool clip (fig. 13(30)) as above.
	Dust particles on the pressure pad (fig. 15).	Be sure the pressure pad (fig. 15) is clean and that the rivets are flush with or below the surface of the pad.
	Cassette felts are worn, stiff, or dirty.	Inspect the cassette felts and if necessary, discard the cassette.
Sprocket shaft assembly (fig. 13(23)) binds.	Gear cover (fig. 13(20)) is bent.	Straighten the gear cover (fig. 13(20)) to relieve the pressure on the sprocket shaft assembly (fig. 13(23)).
	The top surface of the sprocket shaft assembly (fig. 13(23)) binds against the case.	Smooth off the top surface of the sprocket shaft assembly (fig. 13(23)) where it comes in contact with the case, using a fine grade of emery cloth.
	The bearing surfaces of the sprocket shaft assembly (fig. 13(23)) are worn or dirty.	Smooth the bearing points of the sprocket shaft assembly (fig. 13(23)).
Winding is exceptionally hard, shutter does not cock or trip properly.	Binding of the shutter release ring (fig. 14(33)).	Use special tools Nos. 287-A and 287-B to spread or stretch the shutter release ring assembly (fig. 14(33)) slightly. Then open up the shutter tube screw slots in the ring with a fine file.
Lock button (fig. 15(51)) turns too easily or too hard.	The lugs on the lock plate (fig. 13(32)) are bent out too far or not far enough.	Bend the lugs on the lock plate (fig. 13(32)) slightly to maintain correct tension between the case and back assembly (fig. 15(52)).



TL 92173

Figure 12. Top cover assembly and associated parts.

16. TOOLS REQUIRED.

The following overhaul tools, part of Tool Set PH-500/PFM, are required for the various steps in disassembly, tests, repair, and reassembly described in the succeeding paragraphs.

TOOL NO.	NAME	APPLICATION
287-A and 287-B	Combination block and collar.	For spreading shutter release ring (fig. 14(33)).
288	Wrench.	For shutter retaining collar (fig. 14(39)).

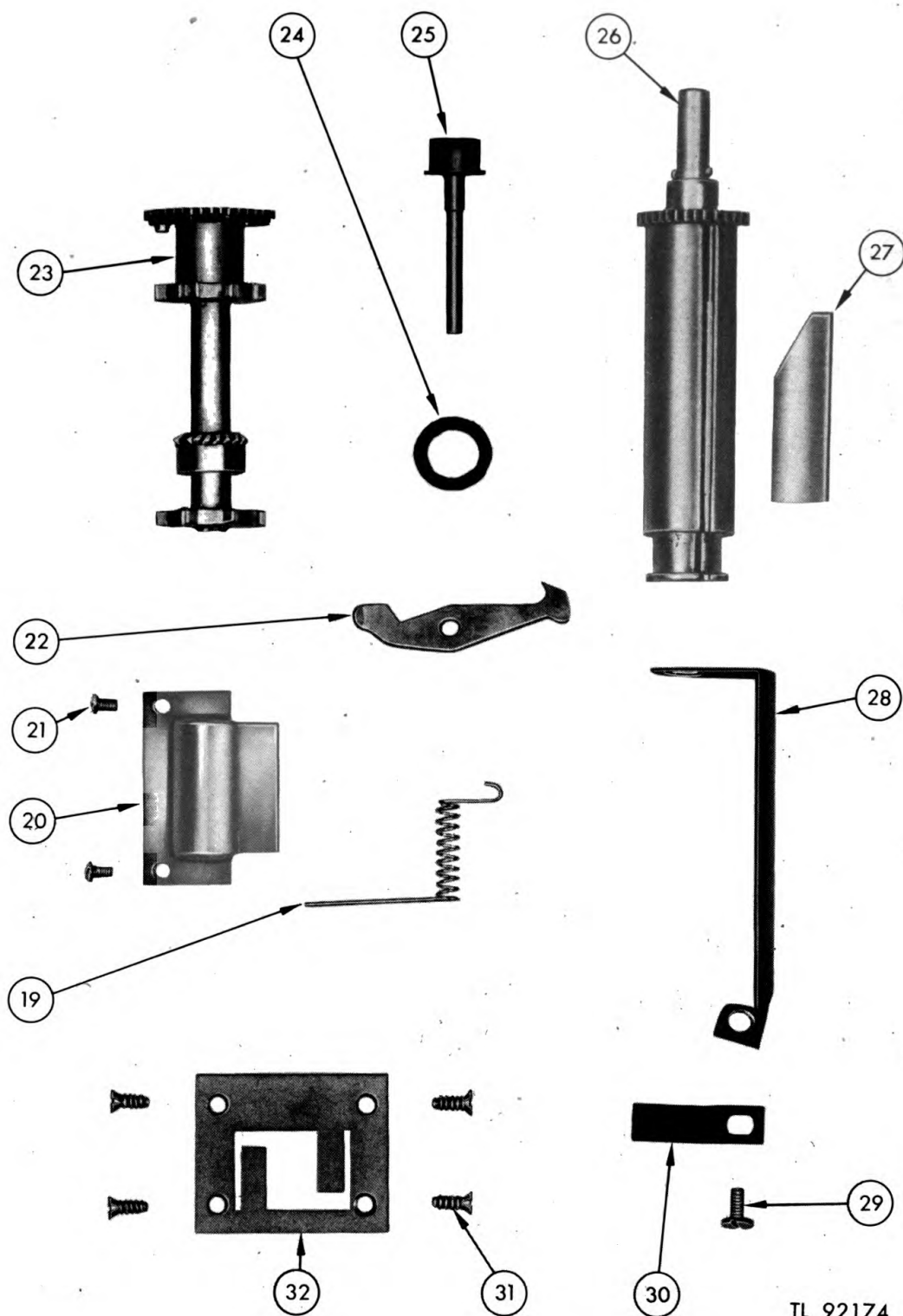
17. DISASSEMBLY.

Before starting disassembly, remove the back assembly (fig. 15(52)) from the camera as described in paragraph 6a.

NOTE: Unless otherwise noted, numbers within parentheses in the text refer to the figure to which reference is made at the beginning of the paragraph.

a. Top Cover and Associated Parts (fig. 12).

- (1) Remove the two range finder clip screws (1) and lift off the bracket spring assembly (3).
- (2) Remove the two finder base to case screws (9) and lift off the direct view finder complete (6).
- (3) Remove the rewind knob screw (8) and lift off the rewind knob (7). This will free the rewind knob spring (5) and rewind key post (2), and these parts can be removed.
- (4) Remove the counter dial screw (17) and lift off the exposure counter dial (18) and counter dial tension washer (15).
- (5) Remove the case locating screw (14).
- (6) Remove the winding knob screw (10) *only*, but do not remove the winding knob assembly (11). If the knob assembly is removed, the springs and rollers in the key assembly (12) will fall out, and an entirely new key assembly will have to be installed.
- (7) Next remove the top cover assembly (4), at the same time carefully holding the winding knob assembly (11) in place on the top cover assembly.
- (8) Remove, *only if necessary*, the two rivets (13) and key assembly (12). (A metal plug to hold the springs and rollers in place while the key assembly is being riveted to the top cover is included in replacement assemblies.)



TL 92174

Figure 13. Parts inside case.

(9) Lift the counter gear (16) out of the depression in the top of the case in which it rests. Check for washers under this gear. If there are any, be sure to replace them during reassembly.

b. Parts Inside Case (fig. 13).

(1) Remove the film take-up spool clip screw (29) and lift off the film take-up spool clip (30). The film take-up spool assembly (26) and light guard (28) can now be pulled out toward the bottom of the case. The film spool spring (27) can be slid from its position in the film take-up spool assembly if necessary.

(2) Next remove the two gear cover screws (21), gear cover (20), and sprocket shaft assembly (23). Tape the bevel gear and shaft (fig. 14 (36)) in place. This should not be removed except when absolutely necessary, because the synchronization of the drive pinion (fig. 14(38)) will be disrupted. For disassembly when necessary, refer to paragraph 17c (5), following.

(3) Holding the film stop pawl (22) and film stop pawl spring (19) in place, pull out the film release button (25) from the top of the case and lift off the film release button washer (24). This will release the pawl spring and film stop pawl, and these parts can be removed.

(4) Remove the four lock plate screws (31) and lift off the lock plate (32).

c. Parts on Front of Case (fig. 14).

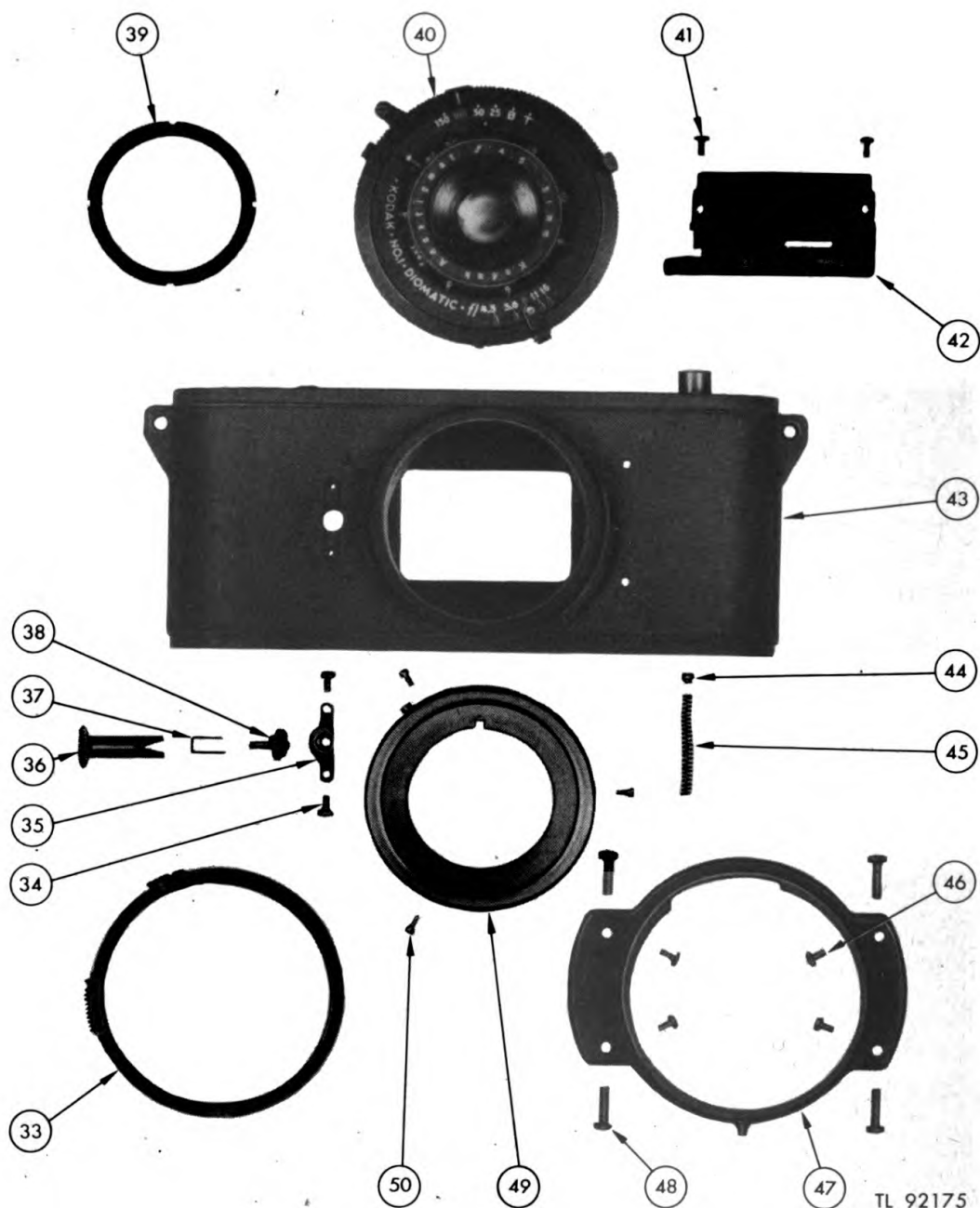
(1) Remove the two trigger guard screws (41) and trigger guard assembly (42).

(2) Next remove the shutter retaining collar (39) located inside the light tube, using special tool No. 288, and Kodak No. 1 Diomatic shutter complete with 51-mm Kodak Anastigmat $f/4.5$ lens (40).

(3) Remove the four shutter release ring guard to case screws (48), the four shutter release ring guard screws (46), and the shutter release ring guard assembly (47).

(4) Remove the three shutter tube screws (50), and lift off the shutter tube assembly (49) and shutter release ring assembly (33). Be careful not to let the release ring spring (45) and release ring spring plunger (44) spring out and get lost. Lift these parts out of the spring groove in the case.

(5) Remove the two drive pinion bearing screws (34), drive pinion bearing (35), drive pinion (38), drive pinion spring (37), and bevel gear and shaft (36) from the inside of the case.



TL 92175

Figure 14. Parts on front of case.

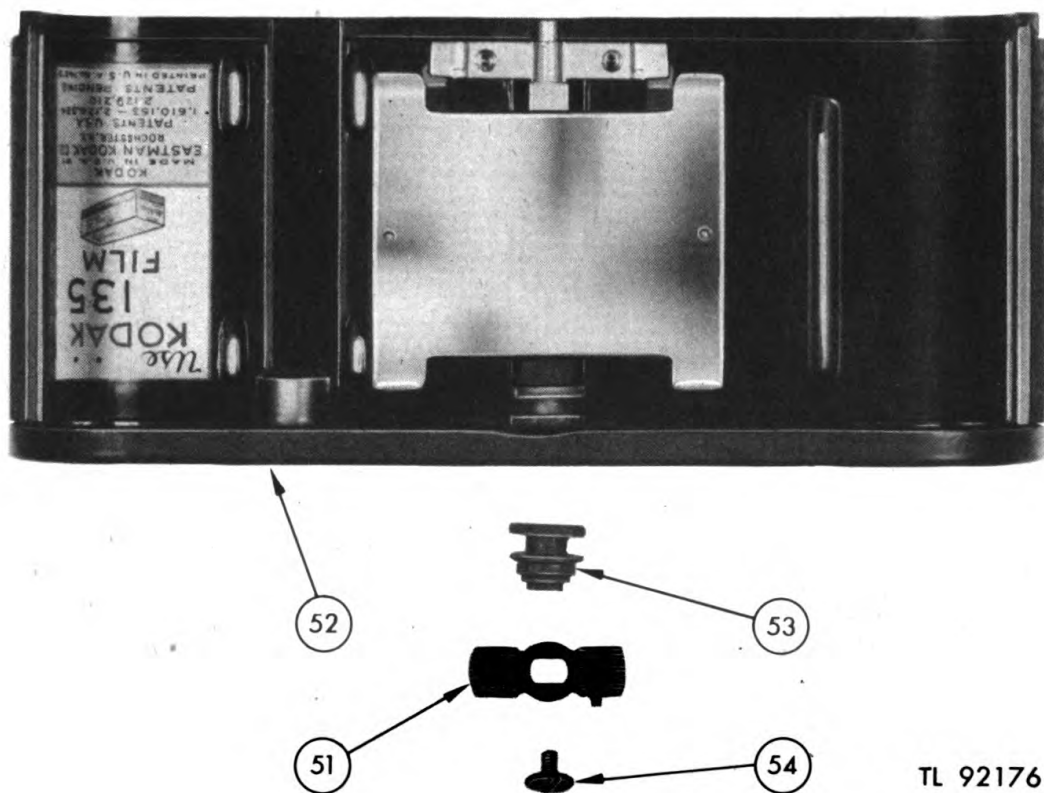


Figure 15. Parts on back assembly.

d. Parts on Back Assembly (fig. 15). Remove the lock button screw (54), lock button (51), and lock stud (53).

18. TESTS AND REPAIRS.

a. Cleaning Shutter.

(1) If dust collects on the shutter blades, diaphragm blades, or other working parts inside the shutter housing, blow air (not to exceed 40 pounds pressure) through the shutter by means of an air hose or rubber bulb.

(2) Disassembly of the shutter is not recommended. If the shutter cannot be cleaned satisfactorily by blowing air through it, replace the entire shutter assembly (fig. 14(40)). Do not under any circumstances oil any parts of the shutter.

b. Refocusing Lens.

(1) If the shutter assembly has been disassembled from the case, the focus of the lens must be checked after reassembly, and, if necessary, adjusted. This is particularly important if either the shutter tube (fig. 14(49)) or case and bushing assembly (fig. 14(43)) has been replaced.

(2) Remove the back assembly and place the camera on a firm support in such a position that the shutter speed and lens opening index plate (fig. 3) is exactly 15 feet from a wall chart, calendar, or other test object suitable for accurate focusing. Place a piece of fine ground glass over the film exposure opening and tape it in place. The ground side must be toward the lens and the glass must be narrow enough to fit between the edge guides in the plane occupied by the film during exposure. With the lens set at $f/4.5$ and opened on time, focus carefully on the chart, using a magnifying glass to examine the image. If the proper distance marking on the focusing collar (fig. 3) does not coincide with the focus indicator (fig. 3), the focusing collar must be adjusted to agree with the measured distance.

(3) Loosen the two small screws recessed in the focusing collar. Holding the front lens mount assembly with the finger so that the lens will remain sharply focused on the chart, rotate the focusing collar until the correct distance marking coincides with the focus indicator. Tighten the two small screws evenly, being careful not to let the focusing collar shift in position until it is screwed tight to the front lens mount assembly. It is important to tighten the two screws evenly in order to avoid possible distortion of the front lens mount assembly.

(4) Recheck the focus as described in subparagraph (2), above, and, if necessary, make a final adjustment.

c. Fitting a New Shutter Release Ring Assembly (fig. 14). The shutter release ring assembly (33) must be perfectly free to turn around the shutter tube assembly (49), but it also must not fit too loosely. Use special tools Nos. 287-A and 287-B to spread and stretch the ring slightly; then open up the shutter tube screw slots in the ring with a fine file. The teeth of the ring gear on the shutter release ring assembly should engage the teeth of the drive pinion (38) to at least three-quarters of their depth. If adjustment is necessary, spring the drive pinion bearing (35) slightly.

d. Fitting a New Back Assembly (fig. 15). Use special tools Nos. 291-A and 291-B to spring the bottom cover of the new back assembly (52) out sufficiently to obtain a snug fit on the case. The back assembly should fit tightly, without binding.

19. REASSEMBLY.

NOTE: Whenever the instructions call for replacing screws which screw into the case, be very careful not to strip the threads in the plastic.

a. Parts on Back Assembly (fig. 15). Replace, in the order named, the lock stud (53), lock button (51), and lock button screw (54).

b. Parts Inside Case (fig. 13).

- (1) Attach the lock plate (32) to the case with the four lock plate screws (31).
- (2) Replace the film release button washer (24) and insert the film release button (25) far enough to engage the film stop pawl (22). Locate the pawl on the button shaft with the hooked points of the pawl toward the back of the camera case and with the longer arm of the pawl to the right. Place the film stop pawl spring (19) on the film release button shaft with the long end of the spring to the left, and the short, hooked end alongside the long end of the film stop pawl. Force the hooked end of the spring, which will lie under the longer arm of the pawl, around and over the film release button shaft and down under the shorter arm of the pawl.
- (3) Slide the light guard (28) over the film take-up spool assembly (26) and insert the light guard and film take-up spool assembly in the case together. Attach the film take-up spool clip (30) with the film take-up spool clip screw (29). Refer to paragraph 15.
- (4) Replace the bevel gear and shaft (fig. 14(36)) and tape or hold it in place.

c. Parts on Front of Case (fig. 14).

- (1) Insert the drive pinion (38) with the drive pinion spring (37) in place over the drive pinion shaft. There must be a slight twist in the spring to give a ratchet effect. Attach the drive pinion bearing (35) with the two drive pinion bearing screws (34). Place the drive pinion bearing so that the curved side is toward the end of the case.
- (2) Next turn the drive pinion (38) so that one tooth shows at the side of the drive pinion bearing (35) toward the top. Turning the case over, replace the sprocket shaft assembly (fig. 13(23)) in such a way that the stop pin at the top comes to rest against the inside of the short end of the film stop pawl (fig. 13(22)). Attach the gear cover (fig. 13(20)) with the two gear cover screws (fig. 13(21)) inside the case.
- (3) Replace the release ring spring (45) and release ring spring plunger (44) together in the spring groove on the front of the case, placing the plunger toward the top of the case.
- (4) Replace the shutter release ring assembly (33) and the shutter tube assembly (49) together, and attach the shutter tube to the case with the three shutter tube screws (50). The shutter release ring must be reassembled with the pin in the spring groove above the release ring spring plunger (44) and the stop spring above the stop pin on the shutter

tube. Make sure that the shutter release ring is perfectly free to turn around the shutter tube against the release ring spring plunger and release ring spring (45). Refer to paragraph 18c.

(5) Place the shutter release ring guard assembly (47) over the shutter tube assembly (49) with the horizontal support toward the bottom of the case, and attach it to the shutter tube with the four shutter release ring guard screws (46) and to the case with four shutter release ring guard to case screws (48).

(6) Replace the Kodak No. 1 Diomatic shutter complete with 51-mm Kodak Anastigmat $f/4.5$ lens (40) and shutter retaining collar (39) located inside the light tube, using special tool No. 288. After reassembly, touch up the shutter retaining collar with dull black lacquer to prevent reflections.

(7) Attach the trigger guard assembly (42) with the two trigger guard screws (41). If necessary, touch up the top edge of the shutter setting lever with red paint so that it will serve as a visible indicator when seen through the slot in the trigger guard assembly (fig. 11).

d. Top Cover and Associated Parts (fig. 12).

(1) Replace the counter dial gear (16) in the depression in the top of the case in which it rests (par. 17a (9)).

(2) Replace the top cover (4), carefully holding the winding knob assembly (11) in place and making sure that the sprocket shaft counter gear is properly meshed with the pinion gear on the under side of the top cover assembly. Secure the winding knob with the winding knob screw (10).

(3) Replace the case-locating screw (14).

(4) Replace, in the order named, the counter dial tension washer (15), exposure counter dial (18), and counter dial screw (17).

(5) Holding the rewind key post (2) in position from inside the case, replace the rewind knob spring (5) and rewind knob (7), and screw the rewind knob to the rewind key post with the rewind knob screw (8).

(6) Attach the direct view finder complete (6) with the two finder base to case screws (9).

(7) Attach the bracket spring assembly (3) with the two range finder clip screws (1).

NOTE: After reassembly, inspect the lens for dust, fingerprints, or smudges. Clean it if necessary.

20. UNSATISFACTORY EQUIPMENT REPORT.

a. When trouble in equipment used by Army Ground Forces or Army Service Forces occurs more often than repair personnel feel is normal, War Department Unsatisfactory Equipment Report, W.D., A.G.O. Form No. 468 should be filled out and forwarded through channels to the Office of the Chief Signal Officer, Washington 25, D.C. Refer to TM 38-250 for complete instructions on the handling of this report.

b. When trouble in equipment used by Army Air Forces occurs more often than repair personnel feel is normal, Army Air Forces Form No. 54 should be filled out and forwarded through channels.

SECTION IV

SUPPLEMENTARY DATA

21. MAINTENANCE PARTS LIST FOR CAMERA PH-324.

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per unit	Run-ning spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
Fig. 2 (1)	8A424	CAMERA PH-324: 35-mm still; Kodak 35 Army Model, w/click stops; 51-mm <i>f</i> /4.5 Kodak Anastigmat lens; lens mount; eye-level folding view finder; Kodak #1 Diomatic shutter, w/speeds from 1/25th to 1/150th sec, Time, and Bulb; Case PH-371 (8A781-371).	.						
Fig. 15 (52)	8P14-245	BACK ASSEMBLY, camera: phenolic plastic; material is black w/outside sprayed olive drab; back of camera; 5.055"lg x 2.180" wd x 1.245" thk overall; EKCo #93485; (consists of:—2 rivets EKCo #22159, film pressure pad assem EKCo #72270, 2 rivets EKCo #89917, screw EKCo #89922, 2 rivets EKCo #89923, back EKCo #89927, lock button EKCo #89953, bottom cover assem EKCo #89969, 2 washers EKCo #93437, lock stud EKCo #93450, magazine spacer EKCo #93468, film pad plunger guide EKCo #93472, top cover assem EKCo #93484, film pad plunger assem EKCo #93495, label transfer EKCo #94278; p/o Sig C Camera PH-324).†	1		*		*		*

Fig. 14 (35)	8P14-251	BEARING, drive pinion: brass; acts as bearing for drive pinion; $1\frac{1}{8}$ " lg x $\frac{5}{32}$ " wd x $\frac{1}{8}$ " thk overall; EKCo # 93454; (mtd by two #0-80NF-2 Fil H screws EKCo # 89937; pressed into yoke shape; p/o Sig C Camera PH-324).	1	*	*	*	*	*
Fig. 13 (25)	8P14-257	BUTTON, film release: brass; black; to release film stop pawl; 0.982" lg x 0.300" diam overall; EKCo # 89915; (held in place by top cover assem; p/o Sig C Camera PH-324).	1	*	*	*	*	*
Fig. 15 (51)	8P14-258	BUTTON, lock: brass; black; to lock camera back; 0.770" lg x 0.320" wd x 0.090" thk overall; EKCo # 89953; (12 serrations on each wing; mtd by a #2-64NF-2 Fil H screw EKCo # 89922; an elongated hole 0.187" lg x 0.125" wd centrally located; p/o Sig C Camera PH-324).	1	*	*	*	*	*
Fig. 14 (43)	8P14-252	CASE AND BUSHING ASSEMBLY, camera: phenolic plastic; black, outside sprayed olive drab; houses mechanism of camera; $5\frac{1}{2}$ " lg x 2.180" wd x $1\frac{1}{32}$ " thk overall; EKCo # 95207; (consists of:—phenolic case EKCo # 89936, key post bushing EKCo # 93466; p/o Sig C Camera PH-324).	1	**	*	*	*	*
Fig. 13 (30)	8P14-45	CLIP, film take-up spool: steel; black; holds film take-up spool in position; $\frac{5}{8}$ " lg x 0.190" wd x 0.015" thk overall; EKCo # 66679; (mtd by a #2-64 Fil H screw EKCo # 93440; 0.156" rad arc shaped to fit film take-up spool, center being 0.436" from flat end; p/o Sig C Camera PH-324).	1	*	*	*	*	*

*Indicates stock available.

**Indicates parts may be requisitioned as needed from Depot Stocks.

†Organizations which are not authorized repairmen of the classifications SSN206, SSN158, SSN042, and SSN133 can requisition only these items.

21. MAINTENANCE PARTS LIST FOR CAMERA PH-324 (Contd.).

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per unit	Run-ning spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
Fig. 14 (39)	8P14-262	COLLAR, shutter retaining: brass; black; holds shutter to case; 1.406" OD x 1.156" ID x 0.080" thk overall; EKCo # 69294; (screws on shutter assem; on circumference 4 equally spaced grooves 0.062" wd x 0.030" d; p/o Sig C Camera PH-324).	1		*		*		*
Fig. 12 (4)	8P14-266	COVER ASSEMBLY, top; brass; black; acts as light trap; 5.052" lg x 1.385" wd x 0.185" thk overall; EKCo # 93484; (consists of:—counter pinion stud EKCo # 66672, 2 leak light strips EKCo # 72245, top cover EKCo # 89928, 2 rivets EKCo # 93436, counter pinion EKCo # 93476, key assem EKCo # 93486; mtd by a # 2-64NF-2 Fil H screw EKCo # 89924; p/o Sig C Camera PH-324).	1		*		*		*
Fig. 13 (20)	8P14-265	COVER, gear: brass; chrome; keeps sprocket assem in place; 0.960" lg x 0.535" wd x 0.417" thk overall; EKCo # 93452; (mtd by two # 1 Parker-Kalon self-threading Oval Fil H screws; EKCo # 93439; p/o Sig C Camera PH-324).	1		*		*		*
Fig. 12 (18)	8P14-270	DIAL, exposure counter: aluminum; black; indicates number of exposures; 0.650" diam x 0.140" thk overall; EKCo # 89921; (calibrations 0 to 35; mtd by a # 2-64 Fil H screw EKCo # 89920; castellated top to facilitate turning; p/o Sig C Camera PH-324).	1		**		*		*

Fig. 12 (6)	8P14-272	FINDER COMPLETE, direct view; folding; 51-mm; brass, black; $1\frac{3}{8}$ " wd x $1\frac{1}{8}$ " lg x $1\frac{1}{8}$ " h overall (closed), $1\frac{3}{8}$ " wd x $1\frac{1}{8}$ " lg x 1" h overall (open); EKCo #89975; (one fixed plano-concave (negative) front lens, one fixed plano-convex (positive) eyelet lens; mtd by two #4-40 Fil H screws EKCo #77263; p/o Sig C Camera PH-324).	1	1	*	*	*
Fig. 14 (36)	8P14-274	GEAR, bevel, and shaft: brass; turns the drive pinion; 0.714" lg x 0.367" diam overall; EKCo #93447; (slips in 0.187" diam hole of case; top is a bevel gear; 60 pitch, 21 teeth, 30 deg spiral angle LH, at bottom a slot 0.250" d; p/o Sig C Camera PH-324).	1	**	*	*	*
Fig. 12 (16)	8P14-275	GEAR, counter: brass; used to drive counter dial; 0.648" OD x 0.089" ID x 0.165" lg; EKCo #93442; (held in place by top cover assem; 37 teeth, 60 pitch, 0.616" PD, 20 deg PA; p/o Sig C Camera PH-324).	1	**	*	*	*
Fig. 14 (47)	8P14-278	GUARD ASSEMBLY, shutter release ring; brass; olive drab; covers shutter release ring; 2.855" OD x 1.902" ID x 0.555" thk; EKCo #89977; (consists of:—guard EKCo #89931, horizontal support EKCo #89933; mtd by four #2-64NF-2 screws EKCo #89932; p/o Sig C Camera PH-324).	1	**	*	*	*

*Indicates stock available.

**Indicates parts may be requisitioned as needed from Depot Stocks.

†Organizations which are not authorized repairmen of the classifications SSN206, SSN158, SSN042, and SSN133 can requisition only these items.

21. MAINTENANCE PARTS LIST FOR CAMERA PH-324 (Contd.).

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per unit	Run-ning spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
Fig. 14 (42)	8P14-279	GUARD ASSEMBLY, trigger: brass; olive drab; guards trigger; $1\frac{3}{4}$ " lg x 0.875" wd x 0.620" thk; EKCo #89978; (consists of:—2 rivets EKCo #89913, origin plate EKCo #89925, trigger guard EKCo #89934; mtd by two #0-80NF-2 screws EKCo #89937; p/o Sig C Camera PH-324).	1		**		*		*
Fig. 13 (28)	8P14-280	GUARD, light: steel; black; acts as a light shield; 1.885" lg x 0.425" wd x 0.015" thk overall; EKCo #87544; (mtd by a #2-64 Fil H screw and slips over 0.168" diam shaft of film take-up spool; a 0.230" diam hole drilled in extension; p/o Sig C Camera PH-324).	1		*		*		*
Fig. 12 (12)	8P14-94	KEY ASSEMBLY: brass; black; prevents winding knob assem from turning counterclockwise and releasing tension on film; 0.605" OD x 0.150" h overall; EKCo #93486; (consists of:—3 pressure roller friction springs EKCo #6247, 3 friction rollers EKCo #21635, key cam EKCo #28454, key cam case plate EKCo #37435, key cam case EKCo #93438; fastened to top cover assem by 2 rivets EKCo #93436; p/o Sig C Camera PH-324).	1		*		*		*
Fig. 12 (11)	8P14-282	KNOB ASSEMBLY, winding: round, knurled; aluminum; black spray; to wind film; 0.810" diam x 0.460" thk overall; EKCo #93493; (consists of:—winding knob EKCo #89930, film spool bushing EKCo #93462; engraved w/word "WIND" and curved arrow indicating direction; mtd by a #2-64NF-2 Fil H screw EKCo #89922; p/o Sig C Camera PH-324).	1		**		*		*

Fig. 12 (7)	8P14-281	KNOB, rewind: round, knurled; aluminum; black; to rewind film; 0.810" diam x 0.460" thk; EKCo #89929; (engraved w/word "REWIND" and curved arrow indicating direction; mtd by a #2-64NF-2 Fil H screw EKCo #89922; p/o Sig C Camera PH-324).	1	**	*	*	*
Fig. 13 (22)	8P14-285	PAWL, film stop: steel; controls winding of film; $1\frac{1}{16}$" lg x $\frac{3}{32}$" wd x 0.040" thk; EKCo #93441; (fits over an 0.081" diam shaft on film release button; an 0.085" diam hole is located near the center; p/o Sig C Camera PH-324).	1	*	*	*	*
Fig. 14 (38)	8P14-288	PINION, drive: steel SAE 1112, chrome pl; turns shutter release ring assem; 0.285" OD x 0.347" lg overall; w/teeth $\frac{1}{2}$ way around; EKCo #93448; (held in position in hole through case by drive pinion spring and bevel gear and shaft; p/o Sig C Camera PH-324).	1	**	*	*	*
Fig. 13 (32)	8P14-291	PLATE, lock: steel; to lock back assem to camera case; 0.937" lg x 0.795" wd x 0.030" thk overall; EKCo #93449; (mtd by 4 self-threading #1 csk FH Parker-Kalon screws EKCo #93461; Z-shaped cutout located in plate; p/o Sig C Camera PH-324).	1	**	*	*	*
Fig. 14 (44)	8P14-294	PLUNGER, release ring spring: brass; used to compress release ring spring; 0.060" lg x $\frac{3}{32}$" diam; EKCo #66705; (fits into release ring spring; shoulder 0.030" thk x 0.075" diam; p/o Sig C Camera PH-324).	1	**	*	*	*

*Indicates stock available.

**Indicates parts may be requisitioned as needed from Depot Stocks.

†Organizations which are not authorized repairmen of the classifications SSN206, SSN158, SSN042, and SSN133 can requisition only these items.

21. MAINTENANCE PARTS LIST FOR CAMERA PH-324 (Contd.).

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per unit	Run-ning spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
Fig. 12 (2)	8P14-297	POST, rewind key: steel SAE 51710; passivated; slotted to lock in film cartridge and tapped and keyed for knob; 1" lg x $\frac{1}{8}$ " diam; EKCo #66683; (fits in bushing in case and bushing assem; p/o Sig C Camera PH-324).	1		**		*		*
Fig. 14 (33)	8P14-303	RING ASSEMBLY, shutter release: brass; chrome shutter release; cocks shutter; 2.140" OD x 1.903" ID x 0.625" thk; EKCo #93490; (consists of:—2 rivets EKCo #65543; ring EKCo #66701, pin EKCo #66704, stop spring EKCo #72564, gear EKCo #93453, 2 stop spring rivets EKCo #62809; fits over shutter tube; p/o Sig C Camera PH-324).	1		*		*		*
Fig. 12 (13)	8P14-306	RIVET, tubular: brass; But H; 0.064" diam; 0.210" lg overall; EKCo #93436; (holds key assem to top cover assem; 0.045" d x 0.041" diam hollow shank; p/o Sig C Camera PH-324).	2		*		*		*
Fig. 12 (1)	6L20802-3BF	SCREW, machine: FH; brass, black; #2-64NF-2; 0.187" lg x 0.154" lg thd; head $\frac{3}{8}$ " diam x 0.033" thk, slot 0.032" wd x 0.025" d; EKCo #82382; (for range finder clip; p/o Sig C Camera PH-324).	2		*		*		*
Fig. 13 (31)	6L18201-3S	SCREW, machine: FH; steel, rustproof, black; 0.187" lg x 0.167" lg thd; head 0.093" diam x 0.020" thk; EKCo #93461; (for lock plate; Parker-Kalon #1 csk FH; p/o Sig C Camera PH-324).	4		**		*		*

Fig. 13 (29)	6L20802-3-1.3F	SCREW, machine: Fil H; brass, black; # 2-64; 0.197" lg x 0.162" lg thd; head $\frac{5}{16}$ " diam x 0.035" thk, slot 0.030" wd x 0.025" d; EKCo #93440; (for film take-up spool clip; p/o Sig C Camera PH-324).	1	*	*	*	*	*
Fig. 12 (17)	6L20752-2-1.3F	SCREW, machine: Fil H; nickel silver, black; # 2-64; 0.135" lg x 0.100" lg thd; head $\frac{1}{4}$ " diam x 0.035" thk, slot 0.030" wd x 0.025" d; EKCo #89920; (for counter dial; p/o Sig C Camera PH-324).	1	*	*	*	*	*
Fig. 12 (8, 10)	6L20752-3-1.3F	SCREW, machine: Fil H; nickel silver, black; # 2-64NPF-2; 0.197" lg x 0.162" lg thd; head $\frac{1}{4}$ " diam x 0.035" thk, slot 0.030" wd x 0.025" d; EKCo #89922; (1 for rewind knob, 1 for winding knob assem, 1 for lock button; p/o Sig C Camera PH-324).	3	*	*	*	*	*
Fig. 14 (34, 41, 46)	6L20900-2-3.3	SCREW, machine: Fil H; steel, olive drab; # 0-80NPF-2; 0.165" lg x 0.130" lg thd; head $\frac{1}{8}$ " diam x 0.035" thk, slot 0.020" wd x 0.020" d; EKCo #89937; (2 for drive pinion bearing, 2 for trigger guard assem, 4 for shutter release ring guard assem; p/o Sig C Camera PH-324).	8	*	*	*	*	*
Fig. 14 (48)	6L20902-6.3F	SCREW, machine: Fil H; steel, rustproof, black; # 2-64NPF-2; 0.380" lg x 0.320" lg thd; head $\frac{5}{16}$ " diam x 0.060" thk, slot 0.030" wd x 0.040" d; EKCo #89932; (holds shutter release ring guard assem to case; p/o Sig C Camera PH-324).	4	*	*	*	*	*
Fig. 12 (9)	6L6440-5.3S	SCREW, machine: Fil H; steel, rustproof, black; # 4-40NC-2; 0.357" lg x 0.312" lg thd; head $\frac{3}{16}$ " diam x 0.045" thk, slot 0.032" wd x 0.030" d; EKCo #77263; (for direct view finder base to case; p/o Sig C Camera PH-324).	2	*	*	*	*	*

*Indicates stock available.

**Indicates parts may be requisitioned as needed from Depot Stocks.

†Organizations which are not authorized repairmen of the classifications SSN206, SSN158, SSN042, and SSN133 can requisition only these items.

21. MAINTENANCE PARTS LIST FOR CAMERA PH-324 (Contd.).

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per unit	Run-ning spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
Fig. 13 (21)	6L18201-2-1.1S	SCREW, machine: Oval Fil H, Z point; steel, rustproof, black; 0.132" lg x 0.100" lg thd; head 0.093" diam x 0.032" thk; EKCo # 93439; (for gear cover; Parker-Kalon # 1 Oval Fil H; p/o Sig C Camera PH-324).	2		*		*		*
Fig. 14 (50)	6L20900-2-3.1	SCREW, machine: special head; steel, rustproof, black; # 0-80NF-2; 0.178" lg x 0.105" lg thd; head 0.087" diam x 0.073" thk, slot 0.020" wd x 0.015" d; EKCo # 93469; (for shutter tube assem; p/o Sig C Camera PH-324).	3		*		*		*
Fig. 13 (23)	8P14-324	SHAFT ASSEMBLY, sprocket: steel, zinc, and brass; used to cock shutter and advance exposure counter dial; 1.579" lg x 0.632" OD; EKCo # 93492; (consists of:—shaft EKCo # 66715, sprocket EKCo # 93455, bevel gear EKCo # 93456, counter gear w/stop pin EKCo # 93488; held in place by gear cover; p/o Sig C Camera PH-324).	1		**		*		*
Fig. 14 (40)	8P14-311	SHUTTER, Kodak # 1 Diomatic, complete w/51-mm Kodak Anastigmat f/4.5 lens; EKCo # 89379; (mtd on shutter tube by shutter retaining collar; p/o Sig C Camera PH-324).	1		**		*		*
Fig. 13 (26)	8P14-313	SPOOL ASSEMBLY, film take-up: brass; chrome; to wind up film; 2.431" lg x 0.540" diam overall; EKCo # 93489; (consists of:—spring # 69292, film take-up spool EKCo # 93444, ratchet EKCo # 93446, pin EKCo # 93465; held in place by film take-up spool clip; p/o Sig C Camera PH-324).	1		**		*		*

Fig. 12 (5)	8P14-318	SPRING; coil; steel; puts tension on rewind knob; 4 coils, 0.437" lg x 0.400" OD x 0.003" diam steel; EKCo # 66684; (slips loosely under rewind knob; ends ground flat; p/o Sig C Camera PH-324).	1		**	*	*	*
Fig. 14 (37)	8P14-317	SPRING, drive pinion: steel SAE 1085; 0.010" diam steel; U-shaped; EKCo # 66682; (ends fit into 2 holes in drive pinion; p/o Sig C Camera PH-324).	1		**	*	*	*
Fig. 13 (27)	8P14-320	SPRING, film spool: beryllium strip ASTM B-120-41T; 0.010" diam; acts as spring clip to hold leader end of film; EKCo # 69292; (slides into slot in film take-up spool; p/o Sig C Camera PH-324).	1		*	*	*	*
Fig. 13 (19)	8P14-160	SPRING, film stop pawl: steel; returns film stop pawl to original position; 0.016" diam; special shape; EKCo # 66675; (fits over an 0.081" diam shaft on film release button; p/o Sig C Camera PH-324).	1		**	*	*	*
Fig. 14 (45)	8P14-319	SPRING, release ring: coil; steel; returns shutter release ring assem to original position; 25 coils, 1" lg x 0.093" OD x 0.010" diam steel; EKCo # 66707; (fits loosely in grooved front of case; p/o Sig C Camera PH-324).	1		**	*	*	*
Fig. 2 (1)	8A424/S1	STRAP ASSEMBLY, carrying: leather, brown; 38½" lg x 0.593" wd x approx ⅜" thk overall; EKCo # 93497; (links-steel, chrome pl; 0.880" lg x 0.593" wd x 0.040" thk; consists of:—2 studs EKCo # 69265, 2 strap links, right EKCo # 77108, 2 strap links, left EKCo # 77109, neck strap EKCo # 78983; fits in holes in molded lugs on ends of case; p/o Sig C Camera PH-324).	1		*	*	*	*

*Indicates stock available.

**Indicates parts may be requisitioned as needed from Depot Stocks.

†Organizations which are not authorized repairmen of the classifications SSN206, SSN158, SSN042, and SSN133 can requisition only these items.

21. MAINTENANCE PARTS LIST FOR CAMERA PH-324 (Contd.).

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per unit	Run-ning spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
Fig. 15 (53)	8P14-327	STUD, lock: brass; black; to lock back assem to case assem; 0.339" lg x $\frac{3}{8}$ " diam; EKCo #93450; (fits in hole in case; keyed for lock button; a 0.073" diam hole is tapped 0.195" d; p/o Sig C Camera PH-324).	1		**		*		*
Fig. 14 (49)	8P14-331	TUBE ASSEMBLY, shutter: brass; chrome pl; holds shutter; 1.900" diam x 0.715" thk overall; EKCo #93494; (consists of:—shutter tube EKCo #89935, stop rivet EKCo #93464; mtd by three #0-80NF-2 screws EKCo #93469; p/o Sig C Camera PH-324).	1		**		*		*
Fig. 13 (24)	8P14-336	WASHER, film release button: flat; cloth, black; prevents light from leaking past film release button; 0.250" ID x 0.350" OD x 0.005" thk; EKCo #72246; (fits around a 0.100" diam shaft of film release button; p/o Sig C Camera PH-324).	1		**		*		*
Fig. 12 (15)	8P14-335	WASHER, tension: thrust; brass, chrome pl; puts tension on exposure counter dial; 0.126" ID x 0.437" OD x 0.010" thk; EKCo #93467; (slips over 0.125" diam gear shaft; three 0.070" openings equally spaced along the circumference $\frac{3}{4}$ " d, leaving three leaves 0.075" thk with curved arcs to supply tension; p/o Sig C Camera PH-324).	1		**		*		*

*Indicates stock available.

**Indicates parts may be requisitioned as needed from Depot Stocks.

†Organizations which are not authorized repairmen of the classifications SSN206, SSN158, SSN042, and SSN133 can requisition only these items.

